

Remarks

Claims 1-11 and 14-17, 19, 20, and 22-39 remain in the application.

The Examiner has objected to Claims 1 and 8 for two stated informalities. These informalities have been corrected as well as changing "wafer" to "substrate", as should be apparent.

The Examiner has rejected Claims 1-11, 14-17, 19, 20, and 22-31 under 35 U.S.C. §103(a) as being obvious over Applicants' admitted art in view of Tepman et al. (U.S. Patent 5,186,718, hereafter Tepman). This rejection is traversed. The Examiner holds that Applicants admit that the processing steps aside the apparatus and the pressure isolation are old. Applicants however contend that Tepman fails to teach a single integrated platform in which etching is performed in a reactor attached to the higher-pressure first transfer chamber and metallization is performed in a reactor attached to the lower-pressure second transfer chamber.

Tepman only generally describes the type of processing to be performed in his integrated system, saying it may include etching and/or deposition (col. 4, line 7) although it is well known in the trade that Tepman is describing the early Endura system primarily directed to sputtering, which requires a very high vacuum. In any case, Tepman reserves the processing chamber 34 attached to the low-pressure second robot chamber 24 (col. 3, line 62 to col. 4, line 3) for processing of the etching and/or deposition. On the other hand, chambers 26, 27 attached to the high-pressure first robot chamber 24 are dedicated to pre-treating, e.g. plasma etch cleaning or heating of the wafer ready for metallization, or post-treating, e.g. cooling (col. 4, ll. 23-29). It is conventional prior to metallization to remove the photoresist in a barrel asher separate from the metallization platform. The claimed etching around the first transfer chamber through a patterned mask material does not constitute Tepman's pre-preprocessing or plasma etch cleaning. Tepman fails to suggest any advantage for performing patterned etching in a reactor attached to the first transfer chamber while performing deposition in a reactor attached to the second transfer

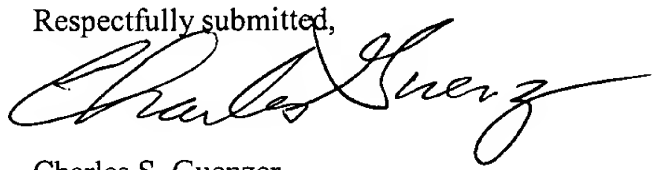
chamber. Plasma etch cleaning, typically involving a very light or shallow etch, differs significantly from patterned etching of typically much deeper features and in which a relatively thick mask needs to thereafter be removed. If anything, Tepman suggests that etching and sputtering should be done in reactors both attached to the second transfer chamber rather than in reactors attached to different transfer chambers. While the Tepman integrated tool can be adapted to the configuration required by the claims, such separation of patterned etching and deposition/sputter is not suggested by Tepman.

Yet further in regards to many of the claims, Tepman fails to suggest that mask ashing should be performed in his integrated tool. In fact, in the past ashing has mostly been performed in a free-standing barrel asher disposed in the atmospheric process path between an etch station and a sputtering station.

New dependent claims have been added to specifically require the steps of the base claims be performed in the stated order. A new set of claims have been added which more simply recites the separation of patterned etching and deposition between the transfer chambers of different base pressures.

In view of the above amendments and remarks, consideration and allowance of all claims are respectfully requested. If the Examiner believes that a telephone interview would be helpful, he is invited to contact the undersigned attorney at the listed telephone number, which is on California time.

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